



## ANALYSIS ON THE TRAITS DISTRIBUTION (MORPHOLOGICAL AND BEHAVIOURAL) AMONG THE FOUR ENDOGAMOUS GROUPS IN HARYANA.

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**ABSTRACT** In the present study, a total of nine traits (five morphological and four behavioural) have been reported among four endogamous groups viz. Kumhar, Ror, Punjabi and Gujjar of Haryana. Data of 609 individuals were collected by conducting a survey in Panipat and Karnal districts of Haryana. All the four behavioural and two morphological traits showed non-significant variations and homogenous distribution while remaining three morphological traits showed significant variations and heterogeneous distribution.

**KEYWORDS** : Morphological, Behavioural, Endogamous Groups, Haryana

### INTRODUCTION

Population of humans living in different geographical areas shows a considerable variation in characters. The genetic heterogeneity between populations represents the diversity or isolation by some unknown barriers (Pandey *et al.*, 2013). For understanding the classification and evolution of human, the role of studying genetic variations is very much required. The genetic variation in human is caused by many factors like selection, temporal variation, genetic drift, gene flow and the presence of different castes in an area provides an excellent scope for genetic studies (Bhasin *et al.*, 1992).

Haryana is a state in India consists of various endogamous groups which are divided into different castes. In Haryana, present population is represented by the Bania/Aggarwal, Brahmin/Pandit, Jaat, Rajput, Khatri, Kumhar, Gujjar, Ror, Naai, Jhinwar, Sunar etc. Singh (1994) has identified 82 communities in Haryana. Many people's have been worked for studying the distribution of these traits (Morphological and behavioural). (Malik *et al.* 1988, Yadav and Gupta 1992, Yadav *et al.*, 1992, 1994 a,b, 1997 a,b,c, 1998, 2000, 2001, Yadav and Singh 2002, Yadav and Jain 2008, Chhikara and Yadav 2011, Jain *et al.*, 2013 a,b, Yadav *et al.*, 2013 a,b, Jaggi and Yadav 2014). In the present investigation, an attempt has been made to study distribution of morphological and behavioural traits among four endogamous groups viz. Kumhar, Ror, Punjabi and Gujjar of Haryana (Panipat and Karnal Districts).

### MATERIAL AND METHODS

During the present study, a total of 609 individuals of four endogamous groups were examined for various morphological and behavioural traits. Data for 4 endogamous groups were obtained by approaching to their residents and in working localities of Haryana. No two individuals related to the same family were taken in to consideration for the test. The consent of every person was taken before the survey.

### Methods

Investigations were carried out following the standard technique of Wiener & Lourie (1969). The following traits were studied:-

**Morphological Traits:** Ear Lobe, Eye colour, Hair colour, Nose tip and chin fissure.

**Behavioural traits:** Hand Clapping, Arm Folding, Leg Folding and Handedness.

### Statistical Analysis

The observations were recorded on a standard proforma. Chi-square test was used to test the homogeneity.

### RESULTS

A total of nine traits were studied. Among the morphological traits studied, the percentage frequency of free ear lobes was found to be highest in the Punjabi (87.33%) followed by the Kumhar, Gujjar (86% each) and lowest in the Ror (80%). For eye colour i.e brown, the highest frequency was recorded in the Kumhar (87.33%) and lowest in the Ror (54.66%). The percentage frequency for dark hair colour was found to be highest in the Kumhar (63.33%) followed by the Ror, Punjabi and Gujjar (61.3%, 56.67% and 55.33%). In nose tip either it is straight or upturned, for straight nose tip, frequency distribution was found to be maximum in the Gujjar (77.33%) and lowest in the Ror and Punjabi (60% each). Frequency distribution for dimple is not present in chin fissure was found maximum in the Ror (46%) and lowest in the

Gujjar (15.33%).

In various behavioural traits observed, the frequency distribution of R-type hand clapping was highest in the Ror (58.67%) and lowest in the Kumhar (38%). In the Gujjar and Punjabi, distribution of R-type hand clapping was almost same as that of the Kumhar (39.33% and 38.67% respectively). For R-type arm folding, the Kumhar (37.33%) possessed highest frequency distribution and the Gujjar (30%) showed lowest frequency distribution. For leg folding, the frequency distribution of R-type was found to be highest in the Kumhar (72%) followed by the Gujjar (68%), Punjabi (66%) and lowest in the Ror (58%). For handedness, the frequency of R-type was highest in the Gujjar (76%) and lowest in the Kumhar (68%).

After calculating chi-square value for all five morphological traits and four behavioural traits, significant variations and heterogeneous distribution was observed. In all five morphological traits observed, three traits showed significant variations and heterogeneous distribution and two showed non-significant variation and homogeneous distribution. All four behavioural traits recorded showed non-significant variation and homogeneous distribution. (Table 1 & 2).

### DISCUSSIONS AND CONCLUSIONS

The frequency of free ear lobe was found to be in the range of 56% to 74% in five endogamous groups of Haryana (Yadav *et al.*, 2000). The range from 53.33% to 63.33% was recorded for three endogamous groups of Jammu and Kashmir (Chadha and Sandhu 2013). The frequency of free ear lobe was noticed in the range of 22.83% to 77.13% in Badhiya muslims of Purnia, Bihar (Pandey *et al.*, 2013). Similar range in free ear lobe distribution was noticed among the Saundik vaishya community of Munger district of Bihar (Birla and Sinha, 2019). The percentage distribution of this investigation differs from the earlier studies and showed a range of 80% to 86%. The frequency of eye colour ranges from 54.66% to 87.33% in the present study. The frequency of dark hair colour ranges from 45% to 92.4% in various endogamous groups of Haryana (Jaggi and Yadav, 2014, Ravikiran 2004, Sikerwal and Hussain, 2016). The frequency of straight nose tip and chin fissure was recorded in the range from 54% to 88% and 30% to 37.33% in four endogamous groups of Haryana (Jain *et al.*, 2013 a).

The frequency range of R-type hand clapping has been reported from 40% in the Rajput (Bhasin *et al.*, 1992) to 79% in the Jain (Yadav *et al.*, 2000). Thus, the frequency range observed in the present study fitted well within the lower maxima but showed remarkable difference in upper maxima with earlier studies. For arm folding, range of frequency of R-type for different North-West populations has been reported from 31.90% in the Gaddi schedule castes (Bhasin *et al.*, 1986) to 78% in the Jain (Yadav *et al.*, 2000). Frequency distribution range in the present study showed a remarkable difference in upper maxima as compared to earlier studies but fits well for lower minima. R-type leg folding frequency distribution range has been reported from 53% in the Sunar (Yadav *et al.*, 1997 b) to 97% in the Rajput (Jain *et al.*, 2013 b). The results of the present study fitted well within the range of previous data. The frequency of R-type handedness ranged from 74.74% in the Sunni Muslims (Yadav and Singh, 2002) to 100% in the Ahir and Chamra (Malhotra 1976) among various North-Indian populations. The frequency range of the present study lied well within the earlier

reported data.

**Table 1: Percentage Frequency Distribution of Various Traits among Four Endogamous Groups**

Traits	Ear lobe Attachment	Eye Colour	Hair Colour	Nose Tip	Chin Fissure	Hand clasping	Arm folding	Leg Folding	Handedness
Kumhar	86	87.33	63.33	76	37.33	38	37.33	72	68
Ror	80	54.66	61.33	60	46	58.67	32.67	58	63.33
Punjabi	87.33	68	56.67	60	32	38.67	34.67	66	73.33
Gujjar	86	72	55.33	77.33	15.33	39.33	30	68	76

**Table 2: Chi-Square Values for Total Group Differences in Traits Studied**

Trait	Chi-square value	Degree of Freedom	Significant/Non significant	Distribution
Ear lobe Attachment	0.57	3	Non-significant	Homogeneous
Eye Colour	11.54	3	Significant	Heterogeneous
Hair Colour	0.96	3	Non-significant	Homogeneous
Nose Tip	15.81	3	Significant	Heterogeneous
Chin Fissure	22.98	3	Significant	Heterogeneous
Hand clasping	10.34	3	Non-significant	Homogeneous
Arm folding	1.29	3	Non-significant	Homogeneous
Leg Folding	3.85	3	Non-significant	Homogeneous
Handedness	2.04	3	Non-significant	Homogeneous

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**REFERENCES**

- Bhasin, M.K., Singh, I.P., Walter, H., Bhasin V., Chahal, S.M.S. and Singh, R. 1986. Genetic studies of Pangwalas, Transhumant and settled Gaddis for colour blindness, midphalangeal hair, ear lobe attachment and behavioural traits. *Anthrop. Anz.* 44: 45-53.
- Bhasin MK, Walter H and Danker-Hofe H (1992). The distribution of genetical, morphological and behavioural traits among the people of Indian region (Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka). Kamla Raj Enterprises. Delhi.
- Birla S and Sinha KK 2019. Analysis of morphogenetic traits among various endogamous human population groups. *Indian journal of applied research.* Vol 9 (3): 71-73.
- Chadha P and Sandhu SK (2013). A study on distribution of morphological, Behavioral and serological traits in three endogamous groups of Jammu and Kashmir. *Cibtech journal of Zoology*, 2(1): 47-50.
- Chhikara SK and Yadav AS (2011). Morphogenetic and behavioural variations among five endogamous groups of Haryana. *Asian Man*, 5: 174-177.
- Jaggi S and Yadav AS (2014). Distribution of ABO and Rh (D) Allele Frequency among Four Endogamous Populations of Haryana. *International Journal of Research in Applied, Natural and Social Sciences*, 2(2): 77-80.
- Jain R, Yadav S and Yadav AS (2013a). Distribution of Morphological and Behavioural Traits among Four Endogamous Groups of Haryana. *Journal of Cytology and Genetics*, 14(1): 15-22.
- Jain R, Yadav S, and Yadav AS (2013b). Distribution of Morphological and Behavioural Traits among Five Endogamous Groups of Haryana. *Annals of Biology*, 29(1): 2-8.
- Malhotra, K.C. 1976. Morphological variation among 5 endogamous castes of Delhi region. Somatoscopic variation. Technical Report No. Anthrop., ISI, Calcutta.
- Malik DVS, Dhiman SR, and Bansal IJS (1988). A study of some morphological behavioural and genetical parameters among the Jats. *Bionature*, 8:136-140.
- Pandey BN, Jahangeer MD and Mall Priyanka (2013). A morpho-genetic study of Badhiya Muslims of Purnia district (Bihar) India. *Int. J. of Life sciences*, 1(3): 233-238.
- Ravikiran, 2004. Human Genetic variability of traits, blood groups and genetic diseases of tribble population of Shimla district (Himachal Pradesh). M.phil. dissertation. Himachal Pradesh University, Shimla.
- Sikerval V and Husain S (2016). Morphological Traits among the Shorgir Rajput's Endogamous group. *International journal of applied and pure sciences and agriculture*, 2(2): 85-90.
- Singh KS (1994). People of India, Haryana. Vol. XXIII: Anthropological survey of India. New Delhi: Manohar Publishers.
- Wiener JS and Lourie JA 1969. *Human Biology. A guide to field methods.* IBP. Handbook no. 9, Blackwell, Oxford.
- Yadav AS and Jain R (2008). Distribution of ABO and Rh (D) allele frequencies among four endogamous groups of Haryana. *Journal of Cytology and Genetics*, 3: 43-46.
- Yadav AS and Singh S (2002). Distribution of morphological, behavioural and serological traits in Meos and Sunni Muslims of Haryana. *Journal of Cytology and Genetics*, 3: 179-184.
- Yadav JS and Gupta MM (1992). An anthropogenetic study of Jats of Haryana India. *Journal of Human Ecology*, 3(2): 147-148.
- Yadav JS, Chhillar AK and Yadav AS (1997 a). Morphogenetic behavioural and serological variations among five endogamous groups of Haryana. *Journal of Cytology and Genetics*, 32: 21-28.
- Yadav JS, Chhillar AK and Yadav AS (1998). Morphogenetic and behavioural variation among five endogamous groups of North West India. *Journal of Cytology and Genetics*, 33: 55-59.
- Yadav JS, Kaur H and Yadav AS (1997 b). A study on distribution of morphological and behavioural traits in seven endogamous groups of Haryana. *Journal of Human Ecology*, 8: 135-136.
- Yadav JS, Kaur M, Chahal SMS and Yadav AS (1997 c). Blood group variations in selected caste population of Haryana. *J Hum Ecol*, 8: 117-120.
- Yadav JS, Kler RS and Yadav AS (1994 a). Occurrence of polydactyly/ synpolydactyly

in six families of five endogamous groups from Northern Haryana. Proceedings of the National Academy of Science, 64(B)III: 275-286.

- Yadav JS, Yadav AS and Chadha PC (2000). Studies on morphogenetic and behavioural traits in five endogamous groups of Haryana. *Journal of Pan African Studies*, 2: 329-332.
- Yadav JS, Yadav AS and Sukhpal (2001). Morphogenetic, behavioural and blood group variations among four endogamous group of North West India. *Journal of Cytology*, 2(NS): 29-34.
- Yadav JS, Yadav AS, Burra MR and Kler RS (1992). Polydactyly, syndactyly and synpolydactyly among the four Jat families of northern Haryana. *Perspectives in Cytology and Genetics*, 7: 1075-1083.
- Yadav JS, Yadav AS, Kaur H and Yadav P (1994 b). Studies on morphological and behavioural traits in eleven endogamous groups of Haryana. *Journal of Human Ecology*, 5: 291-295.
- Yadav S, Karwasra RK and Yadav AS (2013 b). Distribution of ABO and Rh(D) allele frequencies in six endogamous groups of Haryana. *Annals of Agri Bio Research*, 18(1): 79-81.
- Yadav S, Karwasra RK and Yadav AS (2013 a). Comparative study of ABO and Rh(D) allele frequencies in cancer patients and healthy individuals of Haryana. *Annals of Biology*, 29(1): 79-81.